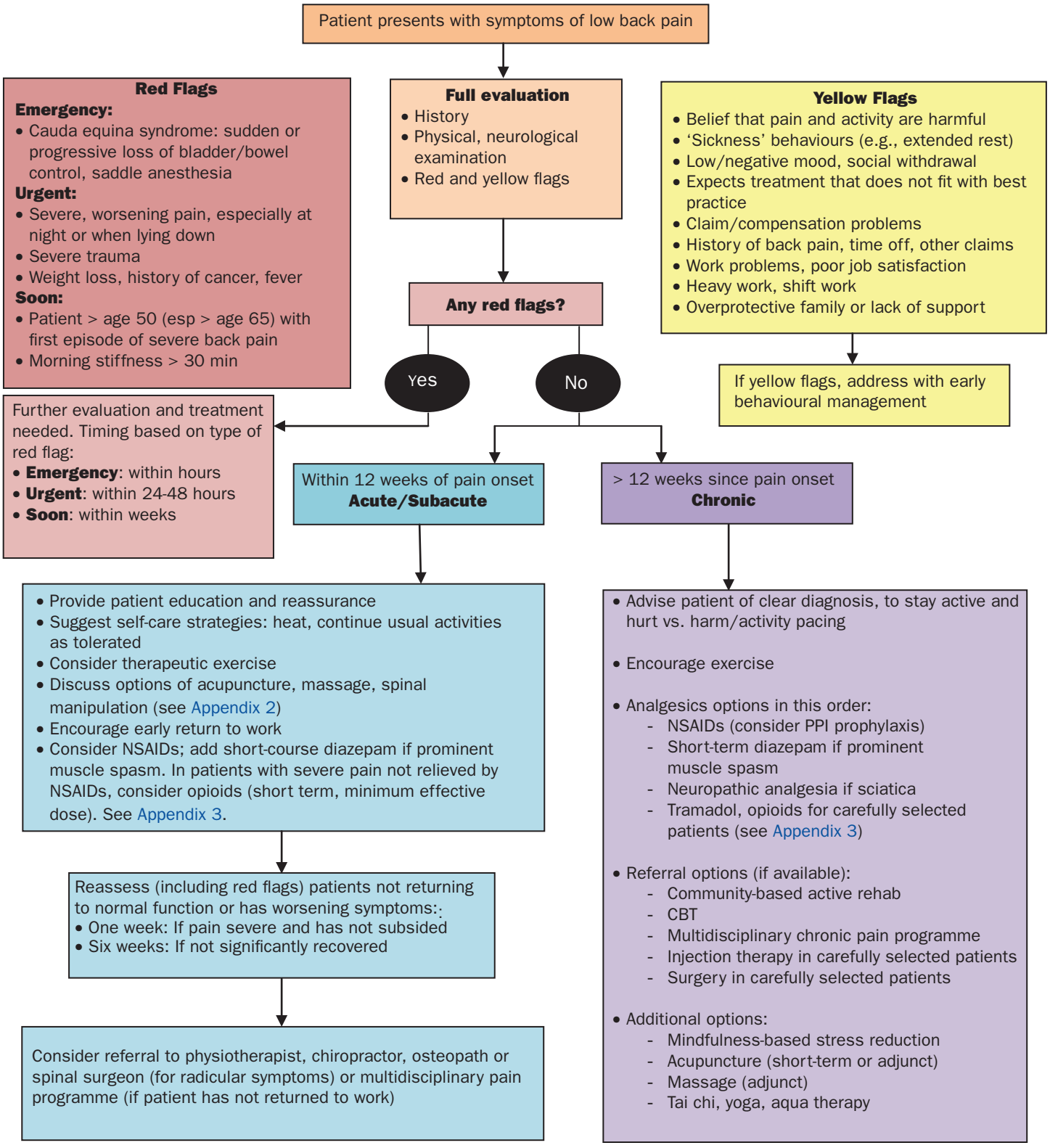
APPENDIX 1. Management of Low Back Pain in Adults



Sources: 1) Toward Optimized Practice (TOP) Low Back Pain Working Group. Evidence-informed primary care management of low back pain: Clinical practice guideline 2015. Edmonton, AB: Toward Optimized Practice. Available from: http://www.topalbertadoctors.org/cpgs/885801.; **2)** Qaseem A, Wilt TJ, McLean RM, Forciea MA, Clinical Guidelines Committee of the American College of P. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. Annals of internal medicine. Apr 04 2017;166(7):514-530.

APPENDIX 2. Acute and Chronic Low Back Pain: Non-Pharmacological Treatment

Intervention	Effectiveness & Comments	Evidence
Acute Low Back Pain		
Exercise	Inconsistent results (vs. no exercise or usual care)	Moderate
Heat: pads, wraps or blankets*	Pain and function: moderate, immediate effect (vs. placebo) Addition of exercise further reduces pain at 7 days	Moderate
Acupuncture	Pain: small effect (vs. sham) Appears to be associated with few side effects but evidence is limited.	Low
Massage	Pain: small effect only in the short term follow-up – 1 week (vs. sham)	Low
Spinal manipulation	Pain and function: small effect at 1 and 3 months (vs. passive) May be provided by a physiotherapist, chiropractor, osteopath Risk of serious complications is low Contraindicated in patients with severe or progressive neurological deficit	Low–Moderate
Chronic Low Back Pain		
Exercise therapy Options: walking, group exercise, aqua therapy	Pain and function: small effect (vs. no exercise) Pain and function: small effect (vs. usual care) – effects were smaller at long-term follow up Encourage patient to start with gentle exercise and gradually increase within pain tolerance.	Moderate
Mindfulness-based stress reduction	Pain and function: small effect (vs. usual care)	Moderate
Acupuncture	Pain and function: moderate effect (vs. sham) Recommend as short-term or adjunct therapy. No serious adverse events reported; incidence of minor adverse events 5%	Moderate
Massage	Pain and function: Small effect in short-term (vs. other non-pharmacological interventions). Combining with other treatment (exercise, education, usual care) superior to either alone	Moderate
Motor control exercise (physiotherapy)	Pain: moderate effect in short, medium and long-term follow-up (vs. placebo physiotherapy, education or advice, or no treatment) Exercise focuses on restoring coordination, control and strength of muscles that control and support the spine. Usually delivered in 1:1 sessions	Low–Moderate
Tai chi	Pain: moderate effect; Function: small effect (vs. waiting list or no tai chi)	Low
Yoga (vs. usual care, or exercise)	Pain and function: moderate effect at 24 weeks Study used Iyengar yoga: postures which develop strength, mobility and stability. It is essential to find an instructor with experience in teaching people with low back pain to avoid further injury	Low
Progressive relaxation	Pain and function: moderate effect (vs. waiting list)	Low
EMG biofeedback	Pain: moderate effect (vs. waiting list)	Low
CBT	Pain: moderate effect (vs. waiting list)	Low
Spinal manipulation	Pain: small effect (vs. inert treatment)	Low
LLLT	Pain and function: small effect (vs. sham laser)	Low

CBT: cognitive behavioural therapy; EMG: electromyography; LLLT: Low-level laser therapy; LOE: Level of evidence

* Advise patients to avoid applying heat directly to skin and to limit application to no more than 15–20 minutes.

Sources: 1) Qaseem A, Wilt TJ, McLean RM, Forciea MA, Clinical Guidelines Committee of the American College of P. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Annals of internal medicine.* Apr 04 2017;166(7):514-530.; **2)** Toward Optimized Practice (TOP) Low Back Pain Working Group. Evidence-informed primary care management of low back pain: Clinical practice guideline 2015. http://www.topalbertadoctors.org/cpgs/885801.; **3)** Furlan AD, Giraldo M, Baskwill A, Irvin E, Imamura M. Massage for low-back pain. *The Cochrane database of systematic reviews.* Sep 01 2015(9):CD001929.; **4)** Saragiotto BT, Maher CG, Yamato TP, et al. Motor Control Exercise for Nonspecific Low Back Pain: A Cochrane Review. *Spine.* Aug 15 2016;41(16):1284-129

APPENDIX 3. Acute and Chronic Low Back Pain: Pharmacological Therapy

	Medication	Dosing	Effectiveness/Comments	Side Effects, Cautions, Contraindications
1st Line	**NSAIDs**: Ibuprofen Naproxen (Equally effective in head-to-head trials)	300-600 mg TID-QDS 250-500 mg BD,	**Acute –** Pain: small effect [Moderate Evidence]; Function: small effect [Low Evidence] **Chronic –** Pain: small to moderate effect [Moderate Evidence]; Function: no to small effect [Low Evidence] Note: mean follow-up was 56 days	Risk of GI complications – PPI prophylaxis in patients > age 65 Coagulation defects Longer term: increased CVD events
	Paracetamol	500-1000 mg QID Max – acute: 4 g/day; chronic: 3 g/day	**Acute –** Pain and function: no effect [Low Evidence]; option in mild pain **Chronic –** insufficient evidence. Not indicated	Negligible Safer than NSAIDs but can increase liver enzyme levels at higher doses
	Muscle relaxant (diazepam)	2-5 mg TID Use lowest dose for shortest possible time (≤ 2 weeks)	**Acute** (for prominent muscle spasm) **–** Pain: small effect [Moderate Evidence]. Most benefit seen in first week **Chronic –** Insufficient evidence. Not indicated	Sedation Addictive potential
2nd Line	**Neuropathics** SNRI: Duloxetine	30–90 mg daily	**Acute –** not indicated **Chronic –** Pain and function: small effect [Moderate Evidence]	Nausea, dry mouth, somnolence, fatigue, constipation, loss of appetite, sweating
	TCAs: Amitriptyline Nortriptyline	10-75 mg OD 10-75 mg OD Start low, go slow (off-label use)	**Acute –** Not indicated **Chronic –** Pain: no effect [Moderate Evidence]; shown to be effective in other chronic pain conditions; useful for sleep disturbance	Anticholinergic side effects: Dry mouth, hypotension, somnolence, confusion, constipation, urinary retention, weight gain, arrhythmia potential
3rd Line	**Opioids** Codeine Dihydrocodeine	Chronic pain: ≤ 50 mg morphine equivalents recommended	**Acute –** Consider codeine in carefully selected patients with severe acute pain not relieved with NSAIDs. Use minimum effective dose for < 1–2 weeks **Chronic –** Up to 30% of patients will not benefit (poor conversion of codeine to morphine)	Constipation, nausea, CNS side effects
4th Line	Tramadol	Max: 400 mg/day Slow titration, then convert to MR product	**Acute –** not recommended **Chronic –** Pain: moderate, short-term effect [Moderate Evidence]; Function: Small effect [Moderate Evidence] Tramadol + paracetamol; tramadol SR: no more effective than NSAIDs	Dizziness, drowsiness, asthenia, GI complaints, potential hypoglycemia Has SSRI activity: caution if adding to TCAs/ SNRIs (serotonin syndrome, QT prolongation)
5th Line	Long-acting formulations of: Morphine sulphate Oxycodone	Start at lowest dose, suggested max dose: 50 mg morphine equivalents daily	**Acute –** not recommended **Chronic –** Pain & function: Small, short-term effect [Moderate Evidence] No more effective than NSAIDs but an alternative if NSAIDs contraindicated	Constipation, nausea Opiate-induced hyperalgesia, endocrine changes Assess addiction potential and use an opioid agreement/set clear boundaries**
1st* Line	**Anticonvulsants** Gabapentin Pregabalin	300-1200 mg TID 75-300 mg BD	• If **neuropathic pain** is present with MSK complaints • If radiculopathy (small, short-term benefit, [Very Low to Low Evidence] No trials in acute low back pain No evidence for any benefit in non-specific chronic low back pain [Very Low to Low Evidence]	Somnolence, dizziness, euphoria Renal impairment requires dose adjustment Occasional renal monitoring indicated

* **ONLY FOR NEUROPATHIC PAIN** ACP: American College of Physicians (see citation below); MR: modified release; MSK: musculoskeletal; SR: sustained release

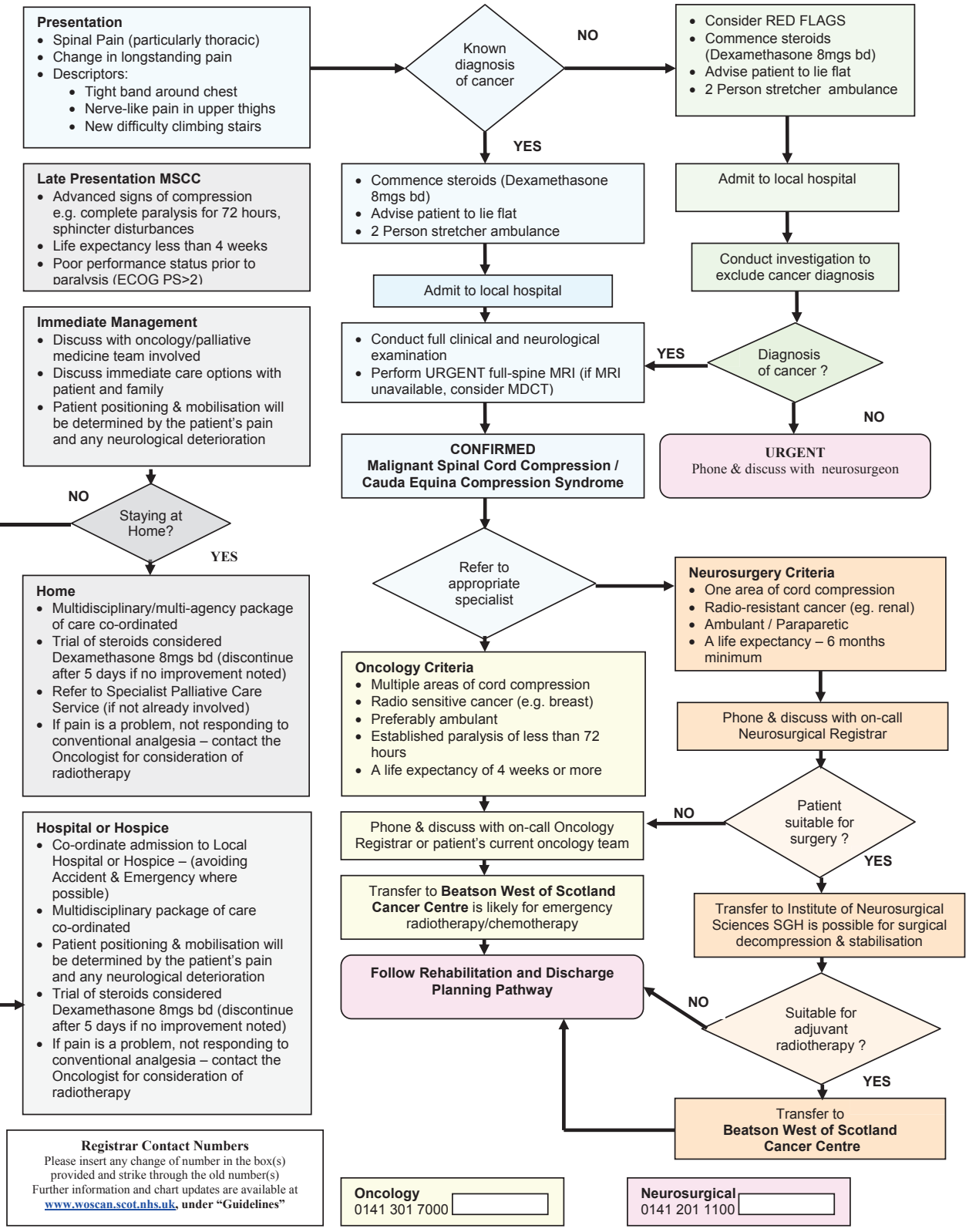
** For further information on prescribing opioids, see: Harrison, Christine. Opioids: Challenges in Prescribing and Management. FMPE PBSG; Hamilton. 2011; 19(1):1-16.

Sources: **(1)** Toward Optimized Practice (TOP) Low Back Pain Working Group. Evidence-informed primary care management of low back pain: Clinical practice guideline 2015. http://www.topalbertadoctors.org/cpgs/885801. **(2)** Regier L, Taillon P. Low Back Pain. *RxFiles*. 2017. http://www.rxfiles.ca; **(3)** Qaseem A, Wilt TJ, McLean RM, Forciea MA, Clinical Guidelines Committee of the American College of Physicians. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Annals of internal medicine*. Apr 04 2017;166(7):514-530.; **(4)** Shanthanna H, Gilron I, Rajarathinam M, et al. Benefits and safety of gabapentinoids in chronic low back pain: A systematic review and meta-analysis of randomized controlled trials. *PLoS medicine*. Aug 2017;14(8):e1002369.; **(5)** Regier L. Opioid analgesics. *RxFiles*. 2017. http://www.rxfiles.ca; **(6)** Enthoven WT, Roelofs PD, Deyo RA, van Tulder MW, Koes BW. Non-steroidal anti-inflammatory drugs for chronic low back pain. *The Cochrane database of systematic reviews*. Feb 10 2016;2:CD012087.; **(7)** Busse JW, Craigie S, Juurlink DN, et al. Guideline for opioid therapy and chronic noncancer pain. *CMAJ*. 2017;189(18):E659-E666. http://www.cmaj.ca/content/189/18/E659.full.pdf

APPENDIX 4 – MALIGNANT SPINAL CORD COMPRESSION PATHWAY

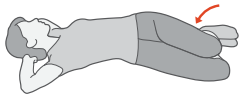
Appendix 4: Referral Flow Chart

Referral of Suspected & Actual Malignant Spinal Cord Compression (MSCC) Or Cauda Equina Compression Syndrome (CECS) in the West of Scotland.



Adapted from: Final Published West of Scotland Guidelines for Malignant Spinal Cord Compression/Oct 2013

Simple exercises



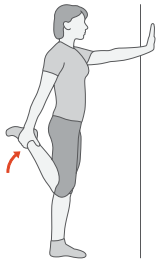
NB: Upper knee should be directly above lower knee.

Back stretch

Lie on your back, hands above your head. Bend your knees and roll them slowly to one side, keeping your feet on the floor. Hold for 10 seconds. Repeat 3 times on each side.

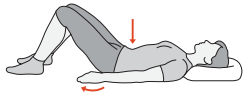
Deep Lunge

Kneel on one knee, the other foot in front. Facing forwards, lift the back knee up. Hold for 5 seconds. Repeat 3 times on each side.



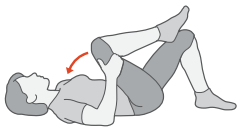
One-leg stand (front)

Holding onto something for support if needed, bend one leg up behind you. Hold for 5 seconds. Repeat 3 times on each side.



Pelvic tilt

Lie down with your knees bent. Tighten your stomach muscles, flattening your back against the floor. Hold for 5 seconds. Repeat 5 times.



Knees to chest

Lie on your back, knees bent. Bring one knee up and pull it gently into your chest for 5 seconds. Repeat up to 5 times on each side.

Summary

- Back pain is common but most cases aren't caused by a serious problem.
- Most cases of back pain get better on their own within a few weeks.
- Stay active. Bed rest for more than a couple of days makes it harder to get going. Gradually increase your normal activities and do regular exercise.
- Take painkillers if needed so you can stay active.

Your pain should ease within 2 weeks and you should recover over approximately a 4–6 week period.

You should carry on with the exercises for at least 6–8 weeks to help prevent another injury.

If the pain is severe or not improving after a week or so, contact your doctor.

Arthritis Research UK

Back pain

This leaflet provides general information about back pain and simple exercises that may help.

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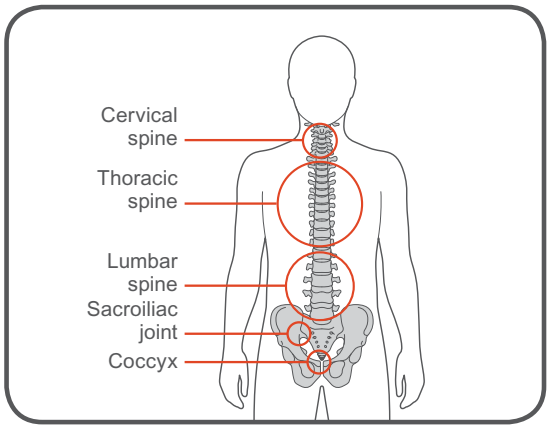
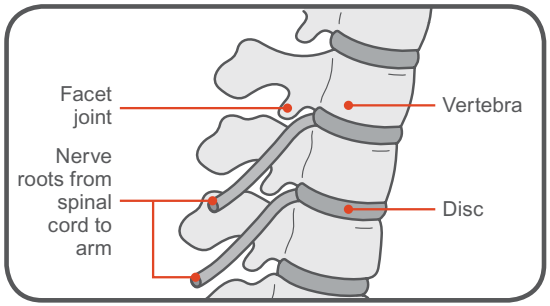
How does the back work?

The back is a complicated structure built around the bones of the spinal column. The spinal column consists of 24 bones (vertebrae) sitting one on top of another. It sits on the pelvis and is topped by the skull. The bones of the spine are connected by discs at the front and facet joints at the back. The discs help to absorb loads on the spine and, with the facet joints, give the spinal column its flexibility.





What causes back pain?

Sprains and strains

Back pain isn't usually a sign of a serious medical condition – it's much more likely that an awkward movement has pulled a muscle or sprained a ligament. Simple cases often improve within 4–6 weeks. Staying active and getting on with normal activities is one of the best ways to deal with back pain, but you can take painkillers if you need to. It's very important to exercise the affected muscle to improve its strength, although you should rest if the muscle is in spasm. Unless you're in severe pain you probably won't need to see a doctor.

Sciatica

Back pain is sometimes linked with pains in the leg which are called sciatica. It affects the sciatic nerve that runs from the spine to the leg. The pain is felt anywhere from the buttock to the big toe. Other symptoms include numbness and tingling in the legs and feet.

Sciatica is caused by an irritation of the sciatic nerve – there's nothing wrong with the leg itself. If you notice weakness of the muscles in your leg, especially if you can't pull your foot up towards you, or if you lose bladder or bowel control, you should see your doctor urgently.

What can be done to help?

Exercise

Exercise is the most important way that you can:

- ease stiffness and pain
- build up muscle strength and stamina
- improve your flexibility and general fitness.

If your back pain lasts a while, lack of movement can cause the muscles to become weak. This makes it more likely that you'll strain them in future. It's important that you don't rest for too long and keep moving.

Medication

Painkillers like paracetamol and ibuprofen may help and you should use them if you need to. Take them regularly and at the recommended dose to help you control pain and allow you to continue exercising. Don't wait until your pain is severe before taking painkillers.

You shouldn't take ibuprofen or aspirin if you're pregnant or have asthma, indigestion or an ulcer until you've spoken to your doctor or pharmacist. Medication can have side-effects so you should read the label carefully and check with your pharmacist if you have any queries.

Physiotherapy

If your back pain is affecting your activity and is persisting, ask your GP about referral to a physiotherapist. Physiotherapy can help you to manage pain and improve your strength and flexibility. A physiotherapist can provide a variety of treatments, help you understand your problem and get you back to your normal activities. They can also give advice on how you can prevent symptoms returning in the future, for example by teaching the correct way to lift heavy objects.